Volume 3. Air Operator Technical Administration

CHAPTER 9. PROVING AND VALIDATION TESTS

SECTION 5. PROVING TESTS: THE DEMONSTRATION PHASE

1623. GENERAL. The demonstration phase consists of the observation and evaluation of the applicant by Federal Aviation Administration (FAA) inspectors during proving flights. Proving flights consist of en route flights and other acceptable flights. These flights are described in more detail in the following paragraphs.

1625. CONDUCT OF EN ROUTE FLIGHTS. En route flights (representative en route) closely simulate the routine line operations that the applicant proposes to conduct. All flights in the en route segment must be observed and evaluated either in flight or at ground facilities. When a deviation for a reduced number of proving test hours decreases the required number of hours by 50 percent or more, all en route flights must be observed and evaluated by FAA inspectors on board the aircraft.

A. Inspection Team Composition. The onboard team of FAA inspectors must include an operations inspector, qualified on the specific aircraft, who directly observes the flightcrew and in-flight events, and reports those observations. For those operations that include Class II navigation or special use airspace, a navigation specialist or a pilot-qualified inspector who is knowledgeable in Class II operations should be a member of the test team. A dispatch-qualified inspector should also be included to observe the operational control functions. The majority of en route flights should also be observed by maintenance and avionics inspectors on board the aircraft. In addition to the in-flight activities, operations and airworthiness inspectors must also evaluate flight initiation, servicing and unscheduled maintenance, and flight termination activities. While representative en route flights are being conducted, other inspectors should observe the applicant's activities at appropriate ground facilities, such as operational or maintenance control centers.

(1) Definitions.

- Proving Flights: A qualified operations inspector is an inspector who, in order of preference, is:
  - Aircraft type rated and current, or
  - Aircraft type rated and not current, or
  - An aviation safety inspector – operations (ASI), type rated in an aircraft within the same group (group I or II) being used in the proving flight and in possession of a "Best Qualified" Letter of Authorization (LOA)
- Validation Flights: A qualified operations inspector is an inspector who, in order of preference, is:
  - Aircraft type rated and current, or
  - Aircraft type rated and not current, or
  - Aircraft group qualified, or
  - An ASI in possession of a "Best Qualified" LOA

NOTE: For validation testing (with the exception of FAA navigation specialists conducting a navigation validation test), the qualified operations inspector must be familiar with the testing being conducted. For extended-range operations with two-engine airplanes (ETOPS) validation flights, the qualified operations inspector should be type rated (not necessarily current) in the specific aircraft, or type rated in another two-engine ETOPS-approved aircraft, and be thoroughly familiar with the ETOPS requirements.

(2) For ALL IN-FLIGHT SCENARIOS conducted during proving flights, a qualified operations inspector must be present in the aircraft. For flights involving repositioning of inspectors for proving or validation "ground" scenarios (i.e., flights that do not include in-flight scenarios), a qualified operations inspector does not need to be onboard the aircraft, provided the flightcrew is type rated, current, and has completed all training requirements, as applicable for the type of operation. Such flights are considered incidental to the proving/validation tests and considered advantageous to both the FAA and operator.

(3) If a qualified operations inspector is not available within the certificate management office (CMO) or Flight Standards District Office (FSDO), the office manager will request assistance in locating a qualified operations inspector from the Regional Flight Standards Division (RFSD). The RFSD will first try to locate a qualified opera-

tions inspector within its region, and, if necessary, look outside its region. The Flight Activity and Crew Tracking System (FACTS) database can be a useful tool in locating such inspectors. The RFSD may also request the assistance of the Flight Standards Inspector Resource Program (FSIRP) office in obtaining a qualified operations inspector. If the FSIRP office determines that the FAA does not have any qualified operations inspectors who are type rated and current or type rated and non-current, then the FSIRP may issue a "Best Qualified" LOA for an operations inspector, current on a similar type aircraft within the same group, and valid for a period of time sufficient to complete the operator's proving test.

NOTE: All LOAs must be initiated by the RFSD, be approved by the FSIRP office, and electronically forwarded to the inspector through the Air Carrier Operations Branch, AFS-220. This can be accomplished by electronically carbon copying AFS-220 when sending the LOA to the inspector.

(4) For unique situations in which an operator must conduct proving flights in an aircraft with only one jump seat and no passenger seats (e.g., cargo configured aircraft), the qualified operations inspector must conduct all in-flight scenarios. The principal operations inspector (POI) should thoroughly review the operator's proving test plan to determine that all FAA disciplines have the opportunity to conduct sufficient testing. Other forms of testing can be accomplished by table-top demonstrations and pre-/post-flight scenarios. Any other unique proving flight situations may require a waiver and such requests should be forwarded to the RFSD for concurrence and further forwarded to the Air Transportation Division, AFS-200, for approval.

(5) All FAA participants conducting the proving test must review the carrier's operation, operations manual, and the proving test plan in order to report deficiencies in any of these areas. It is desirable to have the POI included as part of the in-flight proving test team; but on space-limited flights where the POI is not the qualified operations inspector, the qualified operations inspector should have seating priority in order to facilitate the in-flight scenarios.

(6) Once the qualified operations inspector has completed the in-flight scenarios associated with proving flights, the avionics and maintenance inspector should have an opportunity to observe normal flight deck operations from the flight deck jump seat. When an avionics or maintenance inspector is occupying a flight deck jump seat, no in-flight scenarios will be conducted. The additional inspector observations should be planned so additional flight segments are not required of the operator.

B. Pre-Demonstration Test Briefing with Applicant. The proving test team leader shall conduct briefings with the applicant daily or as necessary to establish what the test team expects the applicant to accomplish during each proving test. Briefings shall include at least the following items:

- The purpose of the proving test
- Status of the inspector in the jumpseat
- Status of the onboard team of inspectors (They shall be treated as passengers.)
- Changing status of passenger to FAA inspector when an FAA credential is revealed
- How simulated scenarios will be initiated, and what action is expected from the applicant
- How to react to an actual emergency during the proving test
- Copies of flight plans, load manifests, and other documents that are expected and that should be provided
- How maintenance discrepancies will be treated or terminated
- Debriefing at the conclusion of each day unless major problems require it sooner (Major discrepancies must be resolved before the proving test may resume the following day.)

C. Determining Applicant Competency. The FAA plan for inspecting and evaluating an applicant's competency during the en route segment should include scenarios and other testing mechanisms designed to test the applicant's effectiveness in each of the following five general areas:

- Flightcrew
- Cabin crew
- Airport/station facilities
- Operational control
- Company procedures

(1) *Flightcrew.* The FAA Team shall evaluate the competency and ability of the flightcrew throughout the en route segment. Examples of areas to be inspected and evaluated are as follows:

- Flightcrew qualification
- Aircraft performance (including flight characteristics)
- Aircraft flight manual limitations
- Aircraft normal, abnormal, and emergency procedures
- Aircraft systems and equipment
- Airport data (including knowledge of required runway lengths, field elevation, facilities, and gates or parking areas)
- Flight management and cruise control
- Company manuals and procedures

- Crew discipline, situational awareness, and crew management
- Crew vigilance and collision avoidance procedures
- Knowledge of en route structure, long-range navigation procedures (if applicable), and unique en route and area-of-operation requirements
- Knowledge of minimum equipment list (MEL) and configuration deviation list (CDL) procedures
- Knowledge of, and competency in, departure and arrival procedures
- Air/ground communications with the company and also with air traffic control (ATC)
- Check airman performance and effectiveness
- Adequacy of aircraft training program as demonstrated by the flightcrew
- Cabin crew and passenger briefings

(2) *Cabin Crew.* The FAA Team shall evaluate the cabin crew competency and ability during the en route segment. Examples of areas to be inspected and evaluated are as follows:

- Competency in all normal procedures associated with their assigned positions
- Knowledge of emergency procedures (including evacuation, fire fighting, pressurization problems, passenger illness or injury, baggage in the cabin, and exit seating)
- Knowledge of applicable manual procedures pertaining to duties and responsibilities
- Knowledge of procedures to follow when a crewmember is incapacitated
- Knowledge of verbal and non-verbal communication procedures between the cabin and cockpit (such as the number of chimes indicating imminent takeoff or landing)
- Training program effectiveness
- Cockpit coordination

(3) *Airport/Station Facilities.* The FAA Team shall determine whether the airports and the applicant's station facilities are adequate to support the specific aircraft and type of operation proposed by evaluating the following:

- Runways and taxiways
- Runway/taxiway lighting
- Approach lighting
- Navigational aids (NAVAID)
- Gate/ramp/loading areas (such as markings, congestion, and lighting)
- Station operations manuals, maintenance manuals, and facilities
- Ground crew qualifications and training (if applicable)
- Passenger enplaning and deplaning procedures
- Baggage and cargo loading
- Aircraft fueling and servicing
- Gate arrival and departure procedures and equipment

(4) *Flight Control, Dispatch, Flight-Following, and Flight-Locating Centers.* Examples of items to be inspected and evaluated at applicable locations are as follows:

- Flight planning
- Dispatch and flight release procedures
- Airport and route information collection and dissemination
- Drift-down and diversionary procedures
- Weather information collection and dissemination
- Dispatch and flight control personnel competency
- Communications capability with the company, with the aircraft, and with other agencies
- Load control (for example, the accuracy of the passenger count and the ability to convey weight and balance changes to and from the aircraft before takeoff)
- Scheduling
- Crew flight and rest time
- Manuals
- High minimums captains
- Maintenance control (procedures and records)
- Flightcrew briefings

(5) *Company Procedures.* Examples of company procedures and programs to be inspected and evaluated are as follows:

- Aircraft operations
- Ground operations/maintenance personnel
- Fueling facilities and equipment
- Security (public protection and restricted articles)
- Adequacy of training programs
- MEL and CDL procedures
- Procedures for accomplishing unscheduled and scheduled maintenance
- Hazardous materials (HAZMAT)

- Ability to conduct operations at unscheduled stops or alternate airports

1627. CONDUCT OF OTHER FLIGHTS. Other flights, such as training, positioning, or ferry flights may be counted toward proving flight hours. FAA observation of these flights allows inspection of the applicant's training, maintenance, and other programs.

NOTE: All training flights that are to be credited toward the proving test requirements must be observed by a qualified operations inspector.

A. En Route Training. During the en route segment, the company trains its initial cadre check airmen, instructors, and line crewmembers. Crewmembers also gain operating experience (OE) so that revenue operations may begin with minimum delay after certification. Since FAA inspectors function as observers during this phase, it is not appropriate for them to require simulated in-flight scenarios that would either disrupt airman training or delay these flights.

B. Flight Attendant Training. Flight attendant training may be conducted on board flights when flight deck and flight attendant training goals are compatible.

1629. TERMINATION OF THE EN ROUTE SEGMENT. The test team may conclude the proving flight as follows:

A. Completion as Planned. Complete the planned proving flight schedule without significant change.

B. Early Completion. The tests may be concluded sooner than planned when all test objectives have been met and the applicant has demonstrated a repetitive ability to conduct line operations in compliance with regulations and safe operating practices. The team should be satisfied that the applicant will continue to function in a satisfactory manner. Before authorizing an early completion of the test, the team shall obtain the concurrence of the manager of the Certificate Management Office (CMO) or Flight Standards District Office (FSDO) and from the Regional Flight Standards Division (RFSD). The team must document the decision to terminate the en route segment earlier than planned with an appropriate Program Tracking and Reporting Subsystem(PTRS) comment (see section 6).

C. Extension. The tests may be extended beyond the point of scheduled termination. This action should be taken when the applicant has not completely demonstrated the ability to conduct operations in compliance with regulations and safe operating practices, but shows the potential to do so in a reasonable number of hours.

D. Unacceptable Performance. The team may terminate testing when it is apparent that the applicant is not capable of correcting deficiencies. When a decision is made to terminate proving tests due to extensive deficiencies, the following must be accomplished:

(1) *RFSD Concurrence.* The team leader shall immediately inform the RFSD of the reasons for the decision and receive the RFSD's concurrence before concluding testing.

(2) *Notification of Applicant.* The team leader shall then notify the applicant of the decision. A letter confirming the reasons for this decision shall be forwarded to the applicant. The letter should list deficient areas and specify corrective actions that must be taken before further en route testing may continue. This letter should also specify that a new proving test plan will have to be developed by the applicant and submitted to the FAA before further en route testing may resume (see figure 3.9.5.1.).

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FIGURE 3.9.5.1.
EXAMPLE OF LETTER TO APPLICANT TERMINATING PROVING TEST

FAA Letterhead

[*date*]

Mr. Robert Smith
Director of Operations
ABC Airlines
1 Park Avenue
New York, NY 11021

Dear Mr. Smith:

This letter is to inform you that effective March 12, 1987, ABC Airlines' proving test demonstration flights with the B737 aircraft are hereby terminated by the Federal Aviation Administration (FAA) due to deficiencies that prevent ABC Airlines from achieving the standards as specified in Title 14 of the Code of Federal Regulations (14 CFR) part 121, section 121.163(a).

Specifically, ABC failed to demonstrate compliance in the following three areas:

1. Dispatch: During two flights conducted on March 10, 1987, ABC dispatchers were unable to obtain required weather information for destination and alternate airports (part 121, section 121.599).

2. Required Crewmembers: On March 11, 1987, ABC attempted to operate flight number 216 without the required complement of flight attendants (part 121, section 121.391(a)(3)).

3. Maintenance: On March 12, 1987, ABC was unable to perform basic required maintenance and servicing of flight number 217 due to difficulties with its contracted maintenance agency. This resulted in the cancellation of three other flights scheduled for March 12 and all flights scheduled for March 13 (part 121, section 121.363(b)).

The FAA has determined that, in view of the above discrepancies, the continuation of proving tests is unwarranted and would serve no useful purpose. Before ABC may commence any additional proving tests for FAA consideration and evaluation, ABC must show that it has corrected the above deficiencies to the satisfaction of the FAA and submit another proving test plan and proposed schedule.

Sincerely,

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